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Energy Environment Interface

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Country India

Table 1 3 Land Land Desertification

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<i>Range lands</i>											
Total area (000 ha)		11780	11840	11820	11760	11720	11800				
Affected by desertification (000 ha)											
Affected by desertification (%)											
<i>Rainfed croplands</i>											
Total area (000 ha)		86620	83820	79900	81400	80990	80460				
Affected by desertification (000 ha)											
Affected by desertification (%)											
<i>Irrigated lands</i>											
Total area (000 ha)	42000	41800	42100	42500	43000	45200	43100	45800			
Affected by desertification (000 ha)											
Affected by desertification (%)											
<i>Forest and woodlands</i>											
Total area (000 ha)	66700	66400	67000	66700	67000	67100	66700	67000			
Affected by desertification (000 ha)											
Affected by desertification (%)											

Table 1 4 Land Landuse

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Crop land (000 ha)		168950		168990	169450	168990	169080	169700			
Permanent meadows and pasture (000 ha)	12002	11934	11977	11880	11850	11796	11780	11770			
Forest and wood land (000 ha)	66700	66400	67000	66700	67000	67100	66700	67000			
Irrigated land (000 ha)	42300	41800	42100	42500	43000	45200	43100	45800			
Non-irrigated land (000 ha)	123600	124000	123700	123600	122600	120800	125980	123900			
Other land (000 ha)		50035		49749	49019	49433	49759	48849			
Total land area (000 ha)	297319	297319	297319	297319	297319	297319	297319	297319			
Crop land (%)		56 82		56 84	56 99	56 84	56 87	57 08			
Permanent meadows and pasture (%)	4 03	4 01	4 03	4	3 99	3 97	3 96	3 96			
Forest and wood land (%)	22 43	21 66	22 53	22 43	22 53	22 57	22 43	22 53			
Irrigated land (%)	14 13	14 06	14 16	14 29	14 46	15 20	14 50	15 40			
Non-irrigated land (%)	41 57	41 71	41 61	41 57	41 24	40 63	42 3	41 7			
Other land (%)		16 83		16 75	16 49	16 63	16 74	16 43			

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Number of contaminated sites											
Waste Production (ton/y)											
Municipal waste	1 07 x 10 ⁸	1 09 x 10 ⁸	1 12 x 10 ⁸	1 14 x 10 ⁸	1 16 x 10 ⁸	1 18 x 10 ⁸	1 21 x 10 ⁸	1 23 x 10 ⁸	1 26 x 10 ⁸	1 28 x 10 ⁸	1 31 x 10 ⁸
Industrial waste		50 x 10 ⁶									
Agricultural waste											
Mining waste											
Radio active waste											
Percentage of waste treated											
Municipal waste											
Industrial waste											
Agricultural waste											
Mining waste											
Radio active waste											
Waste treatment, by methods (ton/y)											
Incineration on land											
Incineration at sea											
Dumping at sea											
Fuel blending											
Physical/chemical treatment											
Solidification/encapsulation											
Co-disposal facilities											
Landfills for hazardous wastes											
Stockpiling of wastes											
Export of waste											
Sewer discharges											
River discharges											
Costal discharges											
Waste recycled by category (quantity)											
Municipal waste											
Industrial waste											
Agricultural waste											
Mining waste											
Radio active waste											

Surface water											
Most important river / lake											
Name of river / lake											
Station											
Kampur (Jaynu) downstream											
Ganga											
1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	
Test date											
25 1	25 8	25 6	24 8	25	24 2	25 5					
8	7 6	7 3	7 9	7 7	7 5	7 6					
8 30	6 90	9 60	10 70	8 50	4 70	3 80					
13 83	17 29	13 18	15 22	16 44	11 88	11 88					
Suspended Solids (mg/l)											
TDS (mg/l)											
Nitrate + Nitrogen + Nitrite (mg/l of N)											
2	1 32	9	22	9 37	16 62	9 86					
Total Kjeldahl Nitrogen											
Phosphorus (mg/l as P)											
Heavy metals											
mercury (mg/l)											
lead (mg/l)											
cadmium (mg/l)											
copper (mg/l)											
zinc (mg/l)											
chromium (mg/l)											
Biota											
species											
number											
Ground water											
Most important aquifers											
Name of aquifer											
Test date											
Nitrate (mg/l)											
20 588	34 154	34 324	30 921			28 039	30 03				
TDS (mg/l)											
pH											
7 7	7 7	8	7 7			8 1	7 7				
265	251	217	222			248	243				
144	72	105	98			87	97				
Sources of pollution (qualitative data)											
Name of most important rivers											
Name of most important lakes											

surface water

Most important river / lake

Name of river / lake Brahmaputra

Station

Takali

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Test date											
Temperature (°F)											
pH											
BOD (mg/l)											
Coliform (1000/l)											
Suspended Solids (mg/l)			1370	1170							
TDS (mg/l)			152	148						148	
Nitrate + Nitrogen + Nitrite (mg/l of N)											
Phosphorus (mg/l as P)						510					
Heavy metals											
mercury (mg/l)											
lead (mg/l)		13	14								
cadmium (mg/l)											
copper (mg/l)		17		108							
zinc (mg/l)		47		916							
chromium (mg/l)		100		222							
Biota											
species											
number											
Ground water											
Most important aquifers											
Name of aquifer											
Test date											
Nitrate (mg/l)											
TDS (mg/l)											
pH											
Chlorides (mg/l)											
Sulphates (mg/l)											
Sources of pollution (qualitative data)											
Name of most important rivers											
Name of most important lakes											
			Domestic			Industrial effluents				Run-off (urban)	

Surface water													
Most important river / lake		Godavari											
Name of river / lake		Takali											
Station		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	
Test date													
Temperature (°F)													
pH		7.7	7.7	7.7	7.7	7.9				7.38			
BOD (mg/l)													
Coliform (1000/l)													
Suspended Solids (mg/l)		1845	1400	1220	1845	2400				5000			
TDS (mg/l)		181	246	232	181	253					181		
Nitrate + Nitrogen + Nitrite (mg/l of N)													
Phosphorus (mg/l as P)													
Heavy metals													
mercury (mg/l)													
lead (mg/l)		12	13		13	5		19					
cadmium (mg/l)										117			
copper (mg/l)		119	55		73	119	98	41	149	140			
zinc (mg/l)		58	62		53		79	170	483	95			
		120	217		140	128		80	184				
Biota													
species													
number													
Ground water													
Most important aquifers													
Name of aquifer													
Test date													
Nitrate (mg/l)													
TDS (mg/l)													
pH													
Chlorides (mg/l)													
Sulphates (mg/l)													
Sources of pollution (qualitative data)							Industrial effluents			Run-off (urban)			
Name of most important rivers													
Name of most important lakes													

11-5M

Run-off (urban)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Water resources											
Total annual inland renewable water resources (Km ³ /y)			1850	1850		1850	1850	1850	1850		
Per capita inland renewable water resources (000 m ³ /y)			2.99	2.35		2.27	2.17	2.10	2.103		
Per capita river flow (000 Km ³ /y), by river basin											
Name of river basin											
Consumptive use (ground water + surface water)											
Total annual withdrawals (Km ³ /y)				380							
Total annual withdrawal as % of total water resources				18.23							
Per capita withdrawal from water resources(000m ³ /y)											
Sectoral withdrawals as % of total water resources											
- Domestic (%)				3							
- Industry (%)				4							
- Agriculture (%)				93							
Non-consumptive use											
Total hydropower generation (millions KWH)	53966	51039	53859	47462	57884	63760	66094	67520			
Total inland water fish catch (000 ton/y) (excluding marine)	1085	1092	1206	1229	1320	1552	1552	1701			

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Average annual oil spill (000 ton/y) (calculated)		206502				273794	298479	328699	385862	403739	396417
Average annual sediment load (ton/year)											
Average annual untreated industrial waste (tn ton/y)	4 09	4 18	4 27	4 35	4 44	4 53	4 63	4 72	4 82	4 92	5
Average annual untreated domestic waste (ton/y)											
Average annual agricultural wastes (ton/y)											
Fertilizer											
Pesticides/insecticides								18 4			
% of urban population in large coastal cities											
Heavy metal concentration (ppm)											
Hg (test date)	Range										
Pb (test date)	4 29-31 87										
Cd (test date)	0 69-5 99										
Cu (test date)	2 12-31 95										
Fe (test date)	36 4-426 5										
Mn (test date)	3 01-6 99										
Zn (test date)	7 78-367 09										
Ni (test date)	0 23-3 12										
Co (test date)											
Average mean monthly sea temperature (degree C)											
Jan	26	26-28	26-28	26-28	28	26-28	28	28	26	28	28
Feb	26	26-28	26-28	26-28	26-28	26-28	26-28	28	26	26	28
Mar	26-28	26-28	26-28	28	28	28	26-28	26-28	26-28	26-28	26-28
Apr	28-30	28-30	28-30	28-30	30	28	28	30	28	28-30	28-30
May	30	28	30	30	30	28-29	30	30	30	30	30
Jun	28	28	28	30	30	28	29	29	30	30	28
Jul	28	28	28	28	28	28	28	28	28	28	28
Aug	27	28	28	28	28	28	28	28	28	28	28
Sep	28	25	28	28	28	28	28	28	28	28	27
Oct	28	28	28	28	28	29	29	29	28	28	27
Nov	28	28	28	28	28	28	28	28	28	28	27
Dec	26-28	26-28	28	28	28	26	26-28	28	28	28	27

Table 2.3 Water Manne Water Pollution (cont.)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<i>Sources of pollution (data available with us - not qualitative data)</i>											
Domestic waste (added to sea @ 60 l/head/d)								4.6×10^6			
Industrial effluents by coastal industries (m^3/y)								0.4×10^6			
River run-off (mean) ($km^3/year$)								1645			
Coastal population								159.6×10^6			
Coastal industries											
Transport/oil tanker (oil transported across Arabian sea)								300 ml/yr			
Oil refinery wastes											
Oil exploration sites											
<i>Sewage and effluents added by rivers to sea</i>								$55 \times 10^6 m^3/yr$			
<i>Solid waste and garbage generated by coastal population (@0.8 kg/h/d)</i>								$53 \times 10^6 tons/yr$			
<i>Fertilizer used (@30.5 kg/ha/year)</i>								$13 \times 10^6 tons/yr$			
<i>Pesticide used (@336 g/ha/year)</i>								80000 tons/yr			
<i>Synthetic detergent</i>								125000 tons/yr			

Table 3.1 Atmosphere and Climate Air Pollution

BOMBAY

Annual emission (ton/y) in most important cities	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Name of city BOMBAY											
CO (Carbon monoxide) in most important cities											
CO ₂ (Carbon dioxide)											
SO ₂ (Sulphur dioxide)									79,264		
NO _x (Nitrogen oxide)									31,547		
Pb (Lead)											
CFC (Chlorofluoro-carbon)											
Halon											
CH ₄ (Methane)											
Atmospheric concentration (mg/m ³ of air)											
Name of city											
CO (Carbon monoxide) in most important cities											
CO ₂ (Carbon dioxide)											
SO ₂ (Sulphur dioxide)											
NO _x (Nitrogen oxide)											
Pb (Lead)											
CFC (Chlorofluoro-carbon)											
Halon											
CH ₄ (Methane)											
Suspended particulate matter	305-535										
Acidity (rainwater pH)											
Percentage of population using air conditioners											
Total numb cities											
Source wise emission (tons/y)											
Emission of SPM from											
Transport											
Industry								1008	3763		
Agriculture									1838		
Live stock											
Oil and gas production											

Country India
Table 3.1 Atmosphere and Climate Air Pollution

ENVIRONMENTAL INFORMATION DATABASE

DELHI

Annual emission (tons/y) in most important cities Name of city DELHI	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
CO (Carbon monoxide) in most important cities											
CO ₂ (Carbon dioxide)										387,995	
SO ₂ (Sulphur dioxide)											
NO _x (Nitrogen oxide)										65,335	
Pb (Lead)										117,895	
CFC (Chlorofluoro-carbon)											
Halon											
CH ₄ (Methane)											
Atmospheric concentration (mg/m ³ of air)											
Name of city				2250	1 8-4 0	1 7-4 2	5-3 5				
CO (Carbon monoxide) in most important cities						6390					
CO ₂ (Carbon dioxide)				80	21-5 1	830	4000	13-22 5	6 5-8 7		
SO ₂ (Sulphur dioxide)				1180	5 6-23 4	11760	8800	25-50	25 8-39 1	38 7-73 4	
NO _x (Nitrogen oxide)				20							
Pb (Lead)											
CFC (Chlorofluoro-carbon)											
Halon											
CH ₄ (Methane)											
Suspended particulate matter											
Acidity (rainwater pH)											
Percentage of population using air conditioners											
Total numb cities	305-535			980	304-989		68-792	331-502	831-723		
Source wise emission (tons/y)											
Emission of SPM from											
Transport											
Industry											
Agriculture								1071		4745	
Live stock										21900	
Oil and gas production											

Country India

Source wise emission (ton/y) DELHI

ENVIRONMENTAL INFORMATION DATABASE	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Emission of CO from								120349		295650	
Transport										46720	
Industry											
Agriculture											
Live stock											
Oil and gas production											
Emission of CO2 from											
Transport											
Industry											
Agriculture											
Live stock											
Oil and gas production											
Emission of SO2 from										4015	
Transport										12775	
Industry											
Agriculture											
Live stock											
Oil and gas production											
Emission of NOx from								33203		57305	
Transport										7300	
Industry											
Agriculture											
Live stock											
Oil and gas production											
Emission of Pb from								53.2		280	
Transport											
Industry											
Agriculture											
Live stock											
Oil and gas production											
Carbon released annually by deforestation(ton/ha/y)											

Country: India

Table 3.1 Atmosphere and Climate Air Pollution

ALL INDIA

ENVIRONMENTAL INFORMATION DATABASE

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<i>Annual emission (ton/y) in most important cities</i>											
Name of city ALL INDIA											
CO (Carbon monoxide) in most important cities											
CO ₂ (Carbon dioxide)											
SO ₂ (Sulphur dioxide)											
NO _x (Nitrogen oxide)											
Pb (Lead)											
CFC (Chlorofluoro-carbon)											
Halon											
CH ₄ (Methane)											
<i>Atmospheric concentration (µg/m³ of air)</i>											
Name of city											
CO (Carbon monoxide) in most important cities											
CO ₂ (Carbon dioxide)											
SO ₂ (Sulphur dioxide)											
NO _x (Nitrogen oxide)											
Pb (Lead)											
CFC (Chlorofluoro-carbon)											
Halon											
CH ₄ (Methane)											
Suspended particulate matter											
Acidity (rainwater pH)											
Percentage of population using air conditioners											
Total numb cities											
<i>Source wise emission (ton/y)</i>											
Emission of SPM from											
Transport											
Industry											
Agriculture											
Live stock											
Oil and gas production											

Table 3.2 Atmosphere and Climate Climate change

Rainfall (mm) DELHI Total annual rainfall (mm) Mean monthly temperature (degree C)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
	694.4	857.9	469.4	379.8	1001.9	479	1051.4	741.3	469.4	966.5	
Jan				1		8.2	12.02	10.06	17.7	17	18.3
Feb						13.2	14.49	13.9	14.1	22.3	21
Mar						19.71	19.17	19.09	26.9	24.8	
Apr						28.6	30.91	32.4	28	33.4	32.9
May						32.5	35.63	37.78	37.1	37.3	38.6
Jun						31.68	30.7	34.87	36.9	36.4	38.5
Jul			29.43			30.31	28.72	35.51	31.6	32.1	30.2
Aug			29.26			31.59	30.61	30.8	30.2	22.9	30.8
Sep			29.71			29.49	29.92	31.9	31	29.5	33.6
Oct			27.33		30.1	24.6	19.65		30	31.4	30.3
Nov			22.45	24.54	22.2	20.58	25.12	24.3	25.2	26.6	26.3
Dec			16.11		17.8	16.18	12.3		19.9	21.3	21.5
Average monthly wind speed (km/hr)											
Jan (at 12.00 noon)						15.38	14.74	15.38	15.06	15.38	
Feb											
Mar											
Apr						19.23	18.91	17.62	16.67	19.23	
May											
Jun											
Jul											
Aug						25.96	32.37	23.72	26.28	29.49	
Sep											
Oct						13.78	14.74	10.9	16.03	10.9	
Nov											
Dec											
Average monthly wind speed (km/hr)											
Jan (at 12.00 noon)							19.85	16.75	18.81	14.95	
Feb											
Mar							17.01	13.92	13.66	13.92	
Apr											
May							32.47	34.02	30.15	32.47	
Jun											
Jul							19.59	15.46	12.89	15.72	
Aug											
Sep											
Oct											
Nov											
Dec											
Average monthly wind speed (km/hr)											
Jan (at 12.00 noon)						17.63	14.1	18.59	18.27	13.46	
Feb											
Mar											
Apr						18.69	13.78	16.67	18.27	16.03	
May											
Jun											
Jul											
Aug						25.96	29.49	23.08	24.36	26.28	
Sep											
Oct						14.1	16.35				
Nov											
Dec											
Average monthly wind speed (km/hr)											
Jan (at 12.00 noon)						16.99	14.74	16.71	16.03	12.5	
Feb											
Mar											
Apr						14.74	12.5	12.5	13.14	13.14	
May											
Jun											
Jul											
Aug						32.69	37.82	45.19	33.33	38.78	
Sep											
Oct											
Nov						10.38	19.55	16.35	12.5		
Dec											

Country India		ENVIRONMENTAL INFORMATION DATABASE											
Average daily sunshine hours (hr)		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	
DELHI													
Jan													
Feb													
Mar													
Apr													
May													
Jun													
Jul													
Aug													
Sep													
Oct													
Nov													
Dec													
Mean monthly evapotranspiration (mm) Delhi													
Jan													
Feb													
Mar													
Apr													
May													
Jun													
Jul													
Aug													
Sep													
Oct													
Nov													
Dec													
Relative humidity (%)													
Jan					63.3		76	78.42	79.9	64	51.2	59.3	
Feb					60.87		57	77.45	81.75	71	43.6	43.6	
Mar					51.83		59.19	58.9	68.41	36.8	39.2	27.9	
Apr					48.02		23	34.24	25.38	29	27.6	30.4	
May					45.23		28.83	40.75	27.29	22.5	29	37.3	
Jun					33.67		51.76	71.6	45.1	40.1	41.9	67.9	
Jul					42.5		68.18	75.73	53.56	58.5	67.9	76.5	
Aug					53.73		63.79	73.64	70.3	76.4	61.4	51.7	
Sep					55.5		65.93	73.51	55.5	63	73	34.6	
Oct					62		63.7	58.25		44.8	37.9	42.4	
Nov					57.1		56.14	44.86	44.4	45.8	35.9	46.7	
Dec					66.03		66.47	79		47.6	42.9	47.2	

Country India		ENVIRONMENTAL INFORMATION DATABASE									
Source wise emission (tons/y) INDIA											
Emission of CO from	Transport										
	Industry										
	Agriculture										
	Live stock										
	Oil and gas production										
Emission of CO2 from	Transport									703550	
	Industry										
	Agriculture										
	Live stock										
	Oil and gas production										
National CO2 emission estimates (total) (in metric tons)	Transport										
	Industry										
	Agriculture										
	Live stock										
	Oil and gas production										
Per capita emissions (metric tons of carbon)	Transport	122.5	134.3	143.6	152.1	163.8	176.5	184.2	192		
	Industry	0.16	0.18	0.18	0.19	0.2	0.22	0.22	0.22		
	Agriculture										
	Live stock										
	Oil and gas production										
Emission of SO2 from	Transport										
	Industry										
	Agriculture										
	Live stock										
	Oil and gas production										
Emission of NOx from	Transport										
	Industry										
	Agriculture										
	Live stock										
	Oil and gas production										
Emission of Pb from	Transport										
	Industry										
	Agriculture										
	Live stock										
	Oil and gas production										
Carbon released annually by deforestation(ton/year)	Transport										
	Industry										
	Agriculture										
	Live stock										
	Oil and gas production										

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Flora											
Fungi											
no of species Known											
no of species Endemic											23000
no of species Threaten											
no of species Known											
no of species Endemic											2500
no of species Threaten											
no of species Known											
no of species Endemic											17000
no of species Threaten											
Monocotyledons											
no of species Known											
no of species Endemic											17000
no of species Threaten											
Other plants											
no of species Known											
no of species Endemic											5386
no of species Threaten											
Fauna											
Mammals											
no of species Known	372	372	372	372	372	372	372	372	372	372	372
no of species Endemic	37	37	37	37	37	37	37	37	37	37	37
no of species Threaten	77	77	77	77	77	77	77	77	77	77	77
Birds											
no of species Known	1228	1228	1228	1228	1228	1228	1228	1228	1228	1228	1228
no of species Endemic	42	42	42	42	42	42	42	42	42	42	42
no of species Threaten	47	47	47	47	47	47	47	47	47	47	47
Amphibians											
no of species Known	204	204	204	204	204	204	204	204	204	204	204
no of species Endemic	81	81	81	81	81	81	81	81	81	81	81
no of species Threaten	1	1	1	1	1	1	1	1	1	1	1
Reptiles											
no of species Known	428	428	428	428	428	428	428	428	428	428	428
no of species Endemic	41	41	41	41	41	41	41	41	41	41	41
no of species Threaten	15	15	15	15	15	15	15	15	15	15	15
Swallowtail Butterflies											
no of species Known	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
no of species Endemic	130	130	130	130	130	130	130	130	130	130	130
no of species Threaten	115	115	115	115	115	115	115	115	115	115	115
Fresh water fishes											
no of species Known	1044	1044	1044	1044	1044	1044	1044	1044	1044	1044	1044
no of species Endemic	80-90	80-91	80-92	80-93	80-94	80-95	80-96	80-97	80-98	80-99	80-100
no of species Threaten	49	50	51	52	53	54	55	56	57	58	59

Table 4.2 Biodiversity Loss of Aquatic Fish

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Inland fish production (000 tons/y)	1103	1160	1229	1301	1335	1402	1536	1710	1789	1993	1994
Marine fish production (000 tons/y)	1698	1716	1713	1658	1817	2275	2300	2447	2576	2688	
Total fish export (000 tons/y)		86 187	83 651	85 843	97 17	99 78	110 843	139 419	172	208 602	225 6
Total fish import (000 tons/y)											

Table 4.3 Biodiversity Wildlife Trade

<i>Birds</i>	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Import (000 US\$)											
Export (000 US\$)											
<i>Reptiles</i>											
Import (000 US\$)											
Export (000 US\$)											
<i>Plants</i>											
Import (000 US\$)											
Export (000 US\$)											
<i>Mammals</i>											
Import (000 US\$)											
Export (000 US\$)											

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<i>Original wildlife habitat (000 km²)</i>											
All forests											
Dry forests											
Moist forests											
Grassland/savannah											
Desert/scrub											
Wetlands/marsh											
Mangroves											
Total											
<i>Current extent (000 km²)</i>											
All forests				642.04		640.13		639.18		640.11	
Dry forests											
Moist forests											
Grassland/savannah											
Desert/scrub											
Wetlands/marsh											
Mangroves				404.6		425.5		424.4		425.6	
Total											
<i>Habitat loss (%)</i>											
All forests											
Dry forests											
Moist forests											
Grassland/savannah											
Desert/scrub											
Wetlands/marsh											
Mangroves											
Total											



	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<i>Nationally protected areas</i>											
Scientific reserves and strict nature reserves (000 ha)											
National parks (000 ha)											
Natural monuments and natural land marks (000 ha)											
Managed nature reserves and wildlife sanctuaries											
Protected landscapes and sea scapes (000 ha)											
Total nationally protected areas (000 ha)							13481	12931.7		14067.5	14870
Total no. of nationally protected areas (number)							359	489	496	496	521
Protected areas as % of total land areas (%)							4.53			4.43	
<i>Internationally protected areas</i>											
Biosphere reserves (nos / 000 ha)											
Wet land of international importance (nos / 000 ha)							6 / 193			6 / 193	
Marine and coastal protected areas (nos / 000 ha)							14 / 474			14 / 474	
Water-source protected areas (nos / 000 ha)							5/-			5/281	

Characteristics of Population		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Total population (million)		747	763	779	795	811	828	845	862	880	898	914
Total fertility rate (per women)		4.50	4.30	4.20	4.10	4.00	3.90	3.80	3.60	3.60	3.50	
Age distribution (%)												
0 - 14 yrs		39.25	38.75	38.46	37.87	37.68	37.20	36.90	36.30	36.00	36.10	
15 - 64 yrs		57.36	58.04	58.34	58.73	58.72	59.10	59.20	59.90	60.10	59.90	
65 and above		3.39	3.20	3.40	3.40	3.60	3.70	3.90	3.80	3.90	4.00	
Sex ratio (female per 1000 men)		935.73	936.86	936.11	935.36	934.61	933.86	933.49	933.49	934.24	934.98	936.11
Population Growth												
Crude birth rate (Nos per 1000 population)		33.9	32.9	32.6	32.2	31.5	30.6	30.2	29.5	29.2	29	28.6
Crude death rate (Nos per 1000 population)		12.6	11.8	11.1	10.9	11	10.3	9.7	9.8	10.1	9.3	9.2
Population density (population per Km2)		227.36	232.05	236.83	241.72	246.7	251.79	256.98	262.28	267.69	272.95	277.81
Annual population growth rate (%)		2.14%	2.10%	2.05%	2.01%	2.10%	2.05%	2.01%	2.09%	2.05%	1.78%	
Rural-Urban Migration												
Rural population (million)		568	577	586	596	605	614	623	622			
Urban population (million)		185	192	199	207	214	222	230	215			
Population density (p/km2) - rural												
Population density (p/km2) - urban												
									3358			

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	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Schools (000)											
Nos of preschool	103	112	118	148	148	139	154	135	137		
Nos of 1st level school (Primary)	5197	5281	5374	5437	5481	5507	5584	5658	5725	5729	
Nos of 2nd level school (Upper Primary & Higher Secondary)	1887	1954	2061	2123	2175	2144	2196	2317	2358	2441	
Nos of 3rd level school (Colleges for general education + Colleges for professional teaching staffs (000))		5726					5932	6204	653	6977	
Teaching staffs (000)											
Nos of teaching staff (preschool)	167										
Nos of teaching staff (1st level) (Primary)	14581	15099	15221	16167	15877	16017	16369	1693	1682	1703	1714
Nos of teaching staff (2nd level) (Upper Primary & Higher Secondary)	20192	21672	21784	2257	22652	23118	23318	23814	24353	2485	2568
Nos of teaching staff (3rd level) (Colleges for general education)	293	3028	3198								
Students (000)											
Nos of students enrolled (preschool)	1033	1236	1272	1421	1440	1353	1510	1436	1465		
Nos of students enrolled (1st level) (Primary)	83933	87441	89993	92944	95740	97318	99118	101577	103370	108200	109100
Nos of students enrolled (2nd level) (Upper Primary & Higher Secondary)	42126	44484	46349	47762	49441	52158	54180	55674	61419	62500	64700
Nos of students enrolled (3rd level) (Colleges for general education)	4272	4471	5629	5825	6128						
Primary school enrollment (male %)	1069	1107	1088	1118			114	1128	1181	1153	1148
Primary school enrollment (female %)	726	767	771	792			855	869	927	929	926
Literacy rate											
Adult literacy rate (male %)	4674	572					618	642			6386
Adult literacy rate (female %)	2488	289					337	3919			3742
Percentage of population without any schooling - rural											
Percentage of population without any schooling - urban											
Total literacy rate (%)	3617	43					482	499			5211

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Characteristics of Health											
Nos of physicians (000)	296.5	308.2	320.3	331.6	335.6	368.6	381.9	394	410.8		402 2887324
Nos of dentists (000)	8.7	9.6	9.7	9.7	9.8	10.5	11	10.8	11.3		
Nos of pharmacists (000)	8 937	9 694	11 208	10 981	15 538	13 23	12 377	10 89	15 065		
Nos of nurses (000)	170.9	197.7	207.4	219.3	245.4	264.5	311.2	340.2			
Nos of population per physician (000)	2 482	2 847	2 407	2 355	2 374	2 203	2 165	2 157	2 142 16164		2 272
Nos of hospitals (000)	29.2	34.3	35	37.5	39	38.5					
Nos of population per bed (000)	1 178	1 143	1 102	1 086	1 076	1 071					
Total calories consumption (daily per capita)	2197	2174	2129	2140	2214	2229	2243		2395		
Total protein consumption (gm, daily per capita)	53.2	52.8	52.7	52	53.1	55	56				
Total fat consumption (gm, daily per capita)	38.3	36.7	36.4	36.4	41	39.6					
Total vegetable calories consumption (daily per capita)	2058	2030	1984	1996	2064	2075					
Total vegetable protein consumption (gm, daily per capita)	46.1	45.6	45.3	44.7	45.4	47.2					
Total animal calories consumption (gm, daily per capita)	28.8	26.8	26.4	26.5	30.7	29					
Total vegetable fat consumption (gm, daily per capita)	139	144	146	144	150	154					
Total animal protein consumption (gm, daily per capita)	7.1	7.3	7.4	7.3	7.6	7.9					
Total animal fat consumption (gm, daily per capita)	9.5	9.9	10	9.9	10.3	10.6					
Available calories as % of requirement (daily per capita)	103	102	100	101	104	105	106		113		
Average life expectancy of male (years)	55.6	57	56.2	58.1	58	58.5	59	59.4	59.9	60	
Average life expectancy of female (years)	56.4	56	57	59.1	58.2	58.7	59.3	59.9	60.4	61	
Infant mortality rate (per 1000 births)	104	97	96	95	94	91	80	91	89	86	79
Malnutrition in children under five years (000)	1800										
No. of human population exposed to radiation (000)											
Mortality incidence											
Nos of deaths due to cholera (000)	68	154	71	224	215	72	87	160	55	53	
Nos of deaths due to malaria (000)	247	213	323	188	209	268	353	421	422	329	
Nos of deaths due to tuberculosis (T B) (000)	18 612	19 312	17 845	23 526	24 29		9.3				
Nos of deaths due to malignant neoplasms (000)	8 594		10 986	11 482				35.7			
Nos of deaths due to diabetes (000)	2 85	3 427	3 697	4 23	4 903		17	20.3	19.4	19.9	
Nos of deaths due to atherosclerosis (000)	5 264	6 892	6 272	6 862	7 025						
Nos of deaths due to chronic heart diseases (000)	1 74	2 775	2 351	2 745	2.4		30.53		31.92		
Nos of deaths due to pneumonia (000)	11 444	6 617	10 884	17 337	15 196	11.9					
Nos of deaths due to influenza (000)											
Nos of deaths due to bronchitis and asthma (000)	4 588	5 329	5 905	6.48	6.644						

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Mortality incidence(cont.)											
Nos of deaths due to chronic liver diseases (000)	3 605	3 556	3 556	4 095	3 56						
Nos of deaths due to motor vehicle accidents (000)	29 4	29 8	33 6								
Nos of deaths due to suicide (000)	50 6	52 8	54 3								
Noise Pollution (only local data available for five stations in Dhanbad for 4 days in 1994)											
Provided by Indian School of Mines, Dhanbad											
Name of the city											
Percent of human population afflicted by noise											
Percent of human population in noise prone areas											
Level of noise in most urbanized cities [dB(A)]											
- Morning											
- Daytime											
- Evening											
- Night											
Health Education											
Nos of Governmental / non-governmental organizations involved in health education programs (000)											
% of rural population getting health education											
Total annual expenditures on health education (000 US \$)											

Table 8. Poverty

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Total population below poverty line (millions)	317	277			322 1		391 4	423			
Total urban population below poverty line (millions)	64 7	53			70 1		87 4	102			
Total rural population below poverty line (millions)	252	230			252		304	321			
Numbers of absolute poor in rural areas (million)	128				251 418				270		
Total rural women living below poverty line (million)					148 157						
Access to safe drinking water (urban %)		69			79		86			84 9	
Access to safe drinking water (rural %)		82			73		69			78 4	
Access to safe drinking water (total %)		63	57		78		75	74		81	
Access to sanitation services (urban %)		28 4			38		44			42 9	
Access to sanitation services (rural %)		0 7			4		3			3 5	
Access to sanitation services (total %)		8	10		13		14	11	14	14	

Country India

Table 9 Agriculture

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Area under agriculture (000 ha)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Rice	41200	41200	41100	41200	38300	41700	42200	42600	42300	41800	42000
Wheat	24700	23600	23000	23100	23100	24100	23500	24000	23000	24500	24910
Maize	5900	5800	5800	5900	5600	5900	5900	5600	5800	5960	5990
Other food grains (jowar, bajra, ragi, millets, barley)	35800	33300	33900	33800	31000	32700	31800	30300	27900		
Oil seeds and pulses	37338	37718	38792	36933	36197	38208	41289	43116	41877		
Coarse Cereals	41710	39210	39470	39740	36550	38680	37690	36320	33420	34420	33060
Oil seeds (9)	18690	18920	19020	18630	20130	21900	22800	24130	25890	25240	26800
Pulses	23540	22740	24420	23160	21270	23150	23410	24660	22540	22360	22430
Fruits (Mango, Apple, Citrus, Guava, Grapes, Pineapple, Banana, Papaya)	7721	7382	7533	6948	6459	7294	7588	7268	7695	7540	7340
Cotton (seed)											
Tuber vegetables											
Leafy vegetables	3110	2953	2849	3079	3279	3329	3405	3651	3882	3570	3390
Sugarcane	1050	1130	1500	1070	960	990	910	1020	1110	930	890
Jute & Mesta	204	350	223	237	249	266	289	306	325	341	400
Rubber											

Agricultural production (000 metric tons)

Rice	60100	58300	63800	60600	56900	70500	74100	74600	73700	72860	78970
Wheat	45500	44100	47000	44300	46200	54100	49700	54500	55100	57210	59130
Maize	7900	8400	6600	7600	5700	8200	9400	9100	8000	9990	9480
Other food grains	25900	22700	19600	19300	20600	23300	24900	23700	18000	26837	
Oil seeds and pulses	24101	22889	22286	21175	21379	29293	26614	28927	26554		
Coarse cereals	33900	31170	26200	26830	26360	31470	34760	32700	25990	36590	30920
Oil seeds (9)	12690	12950	10830	11270	12650	18030	16920	18610	18600	20110	21480
Pulses	12890	11960	13360	11710	10960	13850	12860	14260	12020	12820	13100
Fruits	1149 48	1531 26	1570 86	1242 9	1148 76	1563 3	21321	22335	1770 48	1140	1071
Cotton (seed)											
Tuber vegetables											
Leafy vegetables	174000	170000	171000	186000	197000	203000	223000	240000	249000	228030	227000
Sugarcane	7720	7790	12550	8620	6780	7866	8290	9230	10290	8590	8480
Jute and Mesta	187	198	219	227	254	259	297	330	367	394	400
Rubber											
Live-Stock Population And Production											
Cattle (000 heads)	195610	197950	200300	199300	193000	195500	197300	198400	192650		
Buffalo (000 heads)	71900	73440	75010	74230	72000	73700	75000	77000	78550		
Pigs (000 heads)	10120	10150	10200	10200	10300	10300	10400	10450	10500		
Goats (000 heads)	99430	99490	102870	103500	105000	107000	110000	112000	117000		
Sheep (000 heads)	51130	52770	54460	55482	51684	53486	54588	55700	44407		
Horses (000 heads)	900	910	920	950	953	955	960	965	970		

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Live-Stock Population And Production (cont.)											
Mules (000 heads)	130	132	132	134	135	138	139	140	141		
Asses (000 heads)	1070	1100	1200	1300	1328	1400	1450	1500	1500		
Camels (000 heads)	1200	1250	1300	1350	1390	1400	1450	1490	1500		
Poultry (million)	190	192	200	215	260	300	350	380	410		
Duck (million)											
Milk production (000 metric tons)	41 500	44 000	45 600	46 700	48 400	51 450	53 900	55 700	57 600	60 200	
Egg production (No. in millions)	1 4252	16 128	17 310	17 795	18 890	20 204	21 115	21 984	22 941	23 722	
Wool production (000 metric tons)	38	39.1	40	41.1	40.8	41.7	41.6	40.7	39.9	41.2	
Use of Agrochemicals											
Fertilizer production (000 nutrient tons)											
Nitrogen fertilizer	3917.3	4322.9	5412.2	5465.6	6712.4	6747.4	6993.1	7301	7430	7231	7944
P2O5 fertilizer	1341.9	1460.3	1696.5	1703.1	2289.6	1822.1	2051.1	2561.6	2320.8	1874.3	2556.7
K2O fertilizer	0	0	0	0	0	0	0	0	0	0	0
Fertilizer consumption (000 nutrient tons)											
Nitrogen fertilizer	5486	5660.8	5772.7	5668.3	7246.1	7385.9	7565.5	8046	8427	8789	9511
P2O5 fertilizer	1886	2005	2079	2187	2721	3014	3221	3221	2844	2669	2945
K2O fertilizer	838.5	808.1	860.1	864.5	1068.2	1168	1308.5	1361	884	908	1064
Fertilizer import (000 nutrient tons)											
Nitrogen fertilizer	2008.6	1615.8	1105.6	174.8	218.8	523.1	412.3	566.1	1152.3	1588.8	1473.2
P2O5 fertilizer	745.2	804.8	279.3	0	407.4	1311.3	1015.7	967.8	727.3	721.1	376.1
K2O fertilizer	871	893.8	889.6	809.1	989.2	1278.1	1325.9	1236.4	1081.2	862.5	1281.7
Fertilizer export (000 nutrient tons)											
Nitrogen fertilizer											
P2O5 fertilizer											
K2O fertilizer											
Insecticides production (tons/y)											
Insecticides consumption (tons/y)											
Insecticides import (tons/y)											
Insecticides export (tons/y)											
Herbicides production (tons/y)											
Herbicides consumption (tons/y)											
Herbicides import (tons/y)											
Herbicides export (tons/y)											

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<i>Use of Agrochemicals (cont.)</i>											
Fungicides & Bactericides production (tons/y)											
Fungicides & Bactericides consumption (tons/y)											
Fungicides & Bactericides import (tons/y)					16365	17530	17770	18465	19450		
Fungicides & Bactericides export (tons/y)											
Rodenticides production (tons/y)											
Rodenticides consumption (tons/y)					950	850	1000	900	900		
Rodenticides import (tons/y)											
Rodenticides export (tons/y)											
Mineral oil production (tons/y)											
Mineral oil consumption (tons/y)											
Mineral oil import (tons/y)											
Mineral oil export (tons/y)											
Plant growth regulators production (tons/y)											
Plant growth regulators consumption (tons/y)											
Plant growth regulators import (tons/y)											
Plant growth regulators export (tons/y)											
Disinfectants production (tons/y)											
Disinfectants consumption (tons/y)											
Disinfectants import (tons/y)											
Disinfectants export (tons/y)											

Table 10 Tourism - International / Internal

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Nos of tourists (000 number)	1210	1271	1462	1498	1604	1748	1721	1685	1867	1764	1994
Receipt from tourists (million US \$)	1098	980	1260	1430	1500	1535	1437	1310	1400	1510	
Nos of hotel rooms (000)	31 402	32 609	30 2	34 574	36 666	42 415	44 431	44 495		49546	52
Nos of beds available (000)	62 804	65 218	60 4	69 148	73 332	84 83	88 862	88 99			

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Length of roads (000 km)	1620.5	1686.9	1726.1	1780.6	1847.7	1998.4	2114	2140	2164.5		1994
Length of railway (000 km)	61.85	61.836	61.812	61.976	61.985	62.211	62.36	62.5	62.5	62.5	62.49
Total number of airports							116	116	116		
Nos of cars (000)	1430	1579.2	1747.8	1978.7	2266	2471.1	2789.9				
Nos of commercial vehicles (000)	1388.5	1599	1658.2	1887.2	2138.2	2317.4	3455.5				
Nos of railway wagons (000)	365.4	359.6	354	346.8	345.8	349.6	346	346	338		
Nos of motor boat (000)											
Nos of diesel locomotives (000)	2.905	3.046	3.182	3.298	3.454	3.61	3.76	3.91	4.07		
Nos of electric locomotives (000)	1.252	1.302	1.366	1.433	1.533	1.644	1.743	1.871	2.09		
Other locomotives (000)	5.97	5.571	4.95	4.427	3.826	3.336					
Railway traffic (million ton - kilometer)	223800	240600	256500	269400	259400	263600	277300	245300	253800		
Railway traffic (million passenger - kilometer)	172500	196600	214100	222500	221000	226600	233300	317400	315000		

Table 12 Energy [* includes nuclear power also]

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Thermal & hydropower production (million KWH)	165130	178408	196255	213945	235485	261571	279954	303954	325989	318133	345415
-Thermal & hydropower use (million KWH)*	169100	183299	201279	219838	242508	267039	286940	310330			
Thermal & hydropower export (million KWH)*	111	107	67	30	97	91	95	100			
Thermal & hydropower import (million KWH)*	6	16	170	885	1297	928	1000	1060			
Coal production (000 metric tons)	147400	154200	165700	179700	194600	200900	211600	227400	238500	248700	257800
-Coal use (000 metric tons)	141500	155500	166900	179900	194600	203800	213400	228900	241800	256000	269200
Coal export (000 metric tons)	120	210	160	170		160	100	110	130	100	120
Coal import (000 metric tons)	670	2030	2100	2970		4410	5710	5920	6260	7100	8270
Natural gas production (million m3)	6820	7908	9462	10906	12784	15926	17990	18649	18372	18121	19388
-Natural gas use (million m3)	3969	4685	6655	7662	8832	11070	12464	12766	14441	16116	16340
Natural gas export (million m3)	0	0	0	0	0	0	0	0	0	0	0
Natural gas import (million m3)	0	0	0	0	0	0	0	0	0	0	0
Crude petroleum production (000 metric tons)	27933	29860	31157	30142	31580	33685	33311	31007	27874	26508	32230
-Crude petroleum use (000 metric tons)	35235	41226	44940	47445	47896	51974	51671	50951	54254	53509	56446
Crude petroleum export (000 metric tons)	6760	2044	0	0	0	0	0	0	0	0	0
Crude petroleum import (000 metric tons)	14620	14811	14534	18043	17712	18919	20793	21813	29977	30309	27349
Power generation from nuclear power plants (million KWH)	4075	4982	5022	5035	5817	4625	6141	5524	6726	5398	5605
Per capita commercial energy consumption (kgs of coal equivalent)		250		272	288	310	315	317			

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
GDP (billion US \$)	126 53	127 97	127 98	131 36	130 13	121	118 31	87 5	72 9	74 3	
GNP per capita(US \$)	98 7	105 3	109 8	119 8	125 1	123 3	130 9	108 3	96 5	104 5	
GDP savings (US \$ bn)	35 48	42 45	42 89	53 7	58 88	61 25	70 66	58 03	45 89	50 53	91
Inflation - CPI (%)	8 7	7	7 5	9 6	7 9	6 6	11	13 7	10 7	7	
Total foreign debt (billion US \$)	33 8588	41 0213	48 3541	55 8247	58 4672	63 9292	69 1383	71 5569	74 5	79 1	80 7
Total employed persons (000)	24214	24578	25056	25388	25712	25962	26353	26733			
Total unemployed persons (000)	23034	24861	28261	30542	30050	32776	34632	36300	36758		
Unemployment rate (%)											

ENVIRONMENTAL INFORMATION DATABASE

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Flood Hazard											
Nos of occurrence		3	4	2	1	3		7	2		
Deaths due to flood (000)		1 108	0 462	1 35	1	1 094		2 524	0 551		
Financial loss due to flood (000 US \$)											
Percent of population in flood prone areas											
Drought Hazard											
Nos of occurrence	4	11	8	14	5	3	0	3	6	5	0
Financial loss due to drought (000 US \$)	887956	1300082	907668	5890054	112569	801	0	3578	921044	0	0
Number of crop failure in every five years											
Cyclone*											
Nos of occurrence	3	5		2	1	4	2	2	2	2	
Deaths due to cyclone (000)	0 568	0 071		0 126	0 332	0 11	0 982	0 418	0 294	0 111	
Financial loss due to cyclone (000 US \$)	2523	12478	0	28219	145787	853	1259827	138948	172820	127510	0
Earth Quake											
Nos of occurrence			1		1			1			
Deaths due to earth quake (000)			0 003		0 003			1 5			
Financial loss due to earth quake (000 US \$)											
Percent of population in earth quake prone areas (%)											
Landslides											
Nos of occurrence											
Deaths due to landslides (000)											
Financial loss due to landslides (000 US \$)											
Forest fires											
Nos of occurrence											
Loss of wildlife due to forest fires (000)											
Financial loss due to forest fires (000 US \$)											

* includes typhoon and storms

exchange rate (Rs /US)

11 89 12 23 12 78 12 97 14 48 16 65 17 94 24 47 30 65 31 37 31 4

Yes
510

Specific laws on EIA (Yes/No)
Nos of ongoing EIA projects

Institutions involved in EIA including their subject of interest

Name of the Institution Subject of interest	NEERI, Nagpur Industrial	IIT, Bombay Industrial, Posts	TERI, New Delhi Mining, Thermal	ERM India, Delhi Industrial	EEC, Bombay Industrial	MECON Industrial

Table 15.2 Policies and Institutions Status of environmental monitoring and management

Air quality

188												
Nos of air quality monitoring stations in the country												
Nos of air quality monitoring stations in each city												
City	Hyderabad	Guwahati	Dhanbad	Surat	Fardabad	Shimla	Bangalore	Kochi	Bombay	Madras	Calcutta	Delhi
	8	3	4	4	1	2	5	8	3	8	3	9
Nos of station	Yes											
Legislation available for air quality control (Yes/No)	Inadequate											
Adequacy of existing legislation (Adequate/Inadequate)	No											
Amount of budgetary allocation (million US \$)												

Types of air quality parameters usually monitored and environmental standards

parameter	CO (Carbon monoxide)	Carbon dioxide ² (Sulphur dioxide)	NOx (Nitrogen oxide)	Pb (Lead)	terofluro-carbon	Halon	Methane
yes/no	Yes	No	Yes	Yes	No	No	Yes
standards	2 mg/m ³	30 ug/m ³	30 mg/m ³ 24hour, S A	0.75mg/m ³ 24hour, S A			
(ppm)							

Water quality (both ground water and surface water)

Nos of rivers/lakes in the country	
Rivers with water quality monitoring facilities	
Name of rivers	Nos of monitoring stations
	13 rivers
	480 monitoring stations
Lakes/reservoirs with water quality monitoring facilities	
Name of lakes/rivers	Frequency of sampling
	weekly
Cities with groundwater quality monitoring stations	
Name of cities	134

Legislation available for water quality control (Yes/No) Yes
 Adequacy of existing legislation (Adequate/Inadequate) Inadequate
 Amount of budgetary allocation (Yes/No) No

Types of water quality parameters usually monitored and environmental standards

yes/no	Colour/Turbidity	BOD (mg/l)	COD (mg/l)	pH	DO (mg/l)	TDS (mg/l)	Coliform	Hardness (mg/l)	Temperature (degrees C)	Toxicity
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	heavy metals, radioactivity
standard	IS-10500(1991)	IS-2490(Part1)1981			WHO IS-10500		CPCB, nvar	IS-10500	IS-2490	IS-2490, IS-10500(1991)

classification

Table 15 3 Policies and Institutions Signatories in Major Global Conventions

<i>Wildlife and Habitat</i>	Antarctic Treaty and Convention 1959&1980	Wetlands (Ramsar) 1971	World Heritage 1972	Endangered Species (CITES) 1973	Migratory Species 1979	Biodiversity 1992
	CP, MLR	CP	CP	CP	CP	CP
<i>Oceans</i>	Ocean Dumping 1972Ship Pollution (MARPOL) 1978					
	CP	CP	S			
<i>Atmosphere</i>	Ozone Layer 1985	CFC Control 1987	Climate Change 1992			
	CP	CP	CP			
<i>Hazardous substances</i>	Biological and Toxin Weapons Nuclear Accident Notification 1986					
	CP		CP	Nuclear Accident Assistance 1986		Hazardous Waste Movement 1989
				CP		CP

CP Contracting Party (has ratified or taken similar action)
 S Signatory (has signed but not ratified)
 MLR Contracting party to the convention on the conservation of Antarctic Marine living sources
 IS Indian standards specified by BIS

References for the

Environmental Information Database

To use the reference database

The following pages contain a comprehensive account of the references utilized for each of the variables in the Environmental Information Database. In keeping with the format of the EID, the reference database is organized by table number, with the rows in each table corresponding to the variables in the EID, and the columns representing the reference utilized. The sources are listed by code letter in the next page. An "X" in a cell means that *all* the values in the EID for that variable come from the source corresponding to that column. When values for a variable come from multiple sources, the cells are filled by numerals corresponding to the years for which each source was used, e.g. 1984 is represented by the character '4', 1985 by the character '5', and so on. The year 1994 is denoted by '4*'

As an example, examine the entry in Table 1.1 for Land Deforestation. Trade in Forestry Products: Total Roundwood Production. The reference database tells states that the values for the years 1984 through 1987, 1992, and 1993 were obtained from Jawaharlal Nehru University, and that the values for the years 1988 through 1991 were provided by Ministry of Environment and Forests.

Reference

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TW Kureishy, "Studies on Mercury, Cadmium, and Lead in Marine Systems " "
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Fertilizer Association of India
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November, 1991, CRRI, New Delhi
CPCB Pollution Statistics of Delhi 1996
Ministry of Environment and Forests
India 1991 Population Data Sheet, Registrar General and Census Commissioner
URBAIR -- Bombay City Specific Report, 1995, World Bank
Central Electricity Authority, January 1995

Table 2.1 Water			Inland Water Pollution																									
Surface water																												
Most important river / lake																												
Name of river / lake			Cauvery																									
Station.			Takah																									
Test date																												
Temperature (°F)																												
pH			X																									
BOD (mg/l)																												
Coliform (1000)																												
Suspended Solids (mg/l)			X																									
TDS (mg/l)			X																									
Nitrate + Nitrogen + Nitrite (mg/l as N)																												
Phosphorus (mg/l as P)			X																									
Heavy metals																												
mercury (mg/l)																												
lead (mg/l)			X																									
cadmium (mg/l)																												
copper (mg/l)			X																									
zinc (mg/l)			X																									
chromium (mg/l)			X																									
Biota																												
species																												
number																												
Ground water																												
Most important aquifers																												
Name of aquifer																												
Test date																												
Nitrate (mg/l)																												
TDS (mg/l)																												
pH																												
Chlorides (mg/l)																												
Sulphates (mg/l)																												
Source of pollution (qualitative data)																												
Name of most important rivers																												
Name of most important lakes																												

Table 2.1 Water Inland Water Pollution		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ			
Surface water																																															
Most important river / lake																																															
Name of river / lake		Takah																							Brahmaputra																						
Station																																															
Test date																																															
Temperature (°F)																																															
pH																																															
BOD (mg/l)																																															
Coliform (100l)																																															
Suspended Solids (mg/l)																																															
TDS (mg/l)																																															
Nitrate + Nitrogen + Nitrite (mg/l of N)																																															
Phosphorus (mg/l as P)																																															
Heavy metals																																															
mercury (mg/l)																																															
lead (mg/l)																																															
cadmium (mg/l)																																															
copper (mg/l)																																															
zinc (mg/l)																																															
Ironium (mg/l)																																															
Biota																																															
Species																																															
Number																																															
Ground water																																															
Most important aquifers																																															
Name of aquifer																																															
Test date																																															
Nitrate (mg/l)																																															
TDS (mg/l)																																															
pH																																															
Chlorides (mg/l)																																															
Sulphates (mg/l)																																															
Sources of pollution (qualitative data)																																															
Name of most important rivers																																															
Name of most important lakes																																															

Table 2 1 Water Inland Water Pollution		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ					
Surface water																																																	
Most important river / lake																										Mahanadi																							
Name of river / lake																																																	
Station		Tabala																																															
Test date																																																	
Temperature (°F)																																																	
pH																																																	
BOD (mg/l)																																																	
Calcium (1000)																										X																							
Suspended Solids (mg/l)																										X																							
TDS (mg/l)																																																	
Nitrate + Nitrogen + Nitrite (mg/l of N)																										X																							
Phosphorus (mg/l as P)																																																	
Heavy metals																										X																							
mercury (mg/l)																										X																							
lead (mg/l)																										X																							
cadmium (mg/l)																										X																							
copper (mg/l)																										X																							
zinc (mg/l)																										X																							
chromium (mg/l)																										X																							
Biota																																																	
species																																																	
number																																																	
Ground water																																																	
Most important aquifers																																																	
Name of aquifer																																																	
Test date																																																	
Nitrate (mg/l)																																																	
TDS (mg/l)																																																	
pH																																																	
Chlorides (mg/l)																																																	
Sulphates (mg/l)																																																	
Sources of pollution (qualitative data)																																																	
Name of most important rivers																																																	
Name of most important lakes																																																	

Table 3.1 Atmosphere and Climate		Air Pollution		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
Annual emission (ton/y) in most important cities																																												
Name of city		ALL INDIA																																										
CO (Carbon monoxide)																																												
CO2 (Carbon dioxide)																																												
SO2 (Sulphur dioxide)																																												
NOx (Nitrogen oxide)																																												
Pb (Lead)																																												
CFC (Chlorofluoro-carbon)																																												
Halon																																												
CH4 (Methane)																																												
Atmospheric concentration (ng/m3 of air)																																												
Name of city		ALL INDIA																																										
CO (Carbon monoxide) in most important cities																																												
CO2 (Carbon dioxide)																																												
SO2 (Sulphur dioxide)																																												
NOx (Nitrogen oxide)																																												
Pb (Lead)																																												
CFC (Chlorofluoro-carbon)																																												
Halon																																												
CH4 (Methane)																																												
Suspended particulate matter																																												
Acidity (rainwater, pH)																																												
Percentage of population using air conditioners																																												
Total numb cities																																												
Acidity (rainwater, pH)																																												
Percentage of population using air conditioners																																												
Total numb cities																																												
Source was emission (ton/y)																																												
Emission of SPM from																																												
Transport																																												
Industry																																												
Agriculture																																												
Live stock																																												
Oil and gas production																																												

Source wise emission (tonn/y)		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO							
Emission of CO from	Transport																																																
	Industry																																																
	Agriculture																																																
	Live stock																																																
Emission of CO2 from	Oil and gas production																																																
	Transport																																																
	Industry																																																
	Agriculture																																																
	Live stock																																																
	Oil and gas production																																																
	Transport																																																
	Industry																																																
Emission of NOx from	Agriculture																																																
	Live stock																																																
	Oil and gas production																																																
	Transport																																																
Emission of Pb from	Industry																																																
	Agriculture																																																
	Live stock																																																
	Oil and gas production																																																
Carbon released annually by deforestation(ton/ha/y)																																																	

Table 7 Health (cont.)		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO								
Mortality Incidence(cont.)																																																		
Nos of deaths due to chronic liver diseases (000)																																																		
Nos of deaths due to motor vehicle accidents (000)				X																																														
Nos of deaths due to suicide (000)				X																																														
Noise Pollution																																																		
Provided by Indian School of Mines, Dhanbad																																																		
Name of the city																																																		
Percent of human population afflicted by noise																																																		
Percent of human population in noise prone areas																																																		
Level of noise in most urbanized cities [dB(A)]																																																		
- Morning																																																		
- Daytime																																																		
- Evening																																																		
- Night																																																		
Health Education																																																		
Nos of Governmental / non-governmental organizations																																																		
involved in health education programs (000)																																																		
% of rural population getting health education																																																		
Total annual expenditures on health education (000 US \$)																																																		

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Table 9 Agriculture (cont.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Table 9 Agriculture (cont.)		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO						
Use of Agrochemicals (cont.)																																																
Fungicides & Bactericides production (tons/y)																																																
Fungicides & Bactericides consumption (tons/y)																																																
Fungicides & Bactericides import (tons/y)																																																
Fungicides & Bactericides export (tons/y)																																																
Rodenticides production (tons/y)																																																
Rodenticides consumption (tons/y)																																																
Rodenticides import (tons/y)																																																
Rodenticides export (tons/y)																																																
Mineral oil production (tons/y)																																																
Mineral oil consumption (tons/y)																																																
Mineral oil import (tons/y)																																																
Mineral oil export (tons/y)																																																
Plant growth regulators production (tons/y)																																																
Plant growth regulators import (tons/y)																																																
Plant growth regulators export (tons/y)																																																
Plant growth regulators import (tons/y)																																																
Plant growth regulators export (tons/y)																																																
Disinfectants production (tons/y)																																																
Disinfectants consumption (tons/y)																																																
Disinfectants import (tons/y)																																																
Disinfectants export (tons/y)																																																

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Table 14 Natural Disasters		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO						
<i>Flood Hazard</i>																																																
Nos of occurrence					X																																											
Deaths due to flood (000)					X																																											
Financial loss due to flood (000 US \$)																																																
Percent of population in flood prone areas																																																
<i>Drought Hazard</i>																																																
Nos of occurrence																																																
Financial loss due to drought (000 US \$)																																																
Number of crop failure in every five years																																																
<i>Cyclone*</i>																																																
Nos of occurrence					X																																											
Deaths due to cyclone (000)					X																																											
Financial loss due to cyclone (000 US \$)																																																
<i>Earth Quake</i>																																																
Nos of occurrence					X																																											
Deaths due to earth quake (000)					X																																											
Financial loss due to earth quake (000 US \$)																																																
Percent of population in earth quake prone areas (%)																																																
<i>Landslides</i>																																																
Nos of occurrence					X																																											
Deaths due to landslides (000)					X																																											
Financial loss due to landslides (000 US \$)																																																
<i>Forest fires</i>																																																
Nos of occurrence																																																
Loss of wildlife due to forest fires (000)																																																
Financial loss due to forest fires (000 US \$)																																																

Table 15.2 Policies and Institutions		Status of environmental monitoring and management	
Air quality			
Nos of air quality monitoring stations in the country			
Nos of a. quality monitoring stations in each city			
City			
Nos of station			
Legislation available for air quality control (Yes/No)			
Adequacy of existing legislation (Adequate/Inadequate)			
Amount of budgetary allocation (million US \$)			
Types of air quality parameters usually monitored and environmental standards			
parameter		CO (Carbon monoxide)	
yes/no			
standards			
(ppm)			
Water quality (both ground water and surface water)			
Nos of rivers/lakes in the country			
Rivers with water quality monitoring facilities			
Name of rivers			
Lakes/reservoirs with water quality monitoring facilities			
Name of lakes/reservoirs			
Cities with groundwater quality monitoring station			
Name of cities			

